

WHAT IS CLAIMED IS:

Claim 1: An isolated polypeptide comprising an amino acid sequence:

- (a) as set forth in SEQ ID NO: 5; or
- (b) encoded by the DNA insert in ATCC Deposit No. PTA-976.

Claim 2: An isolated polypeptide comprising:

- (a) an amino acid sequence as set forth in SEQ ID NO: 6, optionally further comprising an amino-terminal methionine;
- (b) an amino acid sequence that is at least about 70 percent identical to the amino acid sequence set forth in SEQ ID NO: 5, wherein the polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation; or
- (c) a fragment of the amino acid sequence set forth in SEQ ID NO: 5 comprising at least about 25 amino acid residues, wherein the polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation, or is antigenic.

Claim 3: An isolated polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 5:

- (a) with at least one conservative amino acid substitution;
 - (b) having a C- and/or N- terminal truncation; or
 - (c) with at least one modification that is a conservative amino acid substitution, C-terminal truncation, or N-terminal truncation;
- wherein the polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation.

Claim 4: An isolated polypeptide encoded by a nucleic acid molecule comprising a nucleotide sequence:

- (a) as set forth in SEQ ID NO: 4;
- (b) of the DNA insert in ATCC Deposit No. PTA-976;
- (c) encoding a polypeptide as set forth in SEQ ID NO: 5; or
- (d) that hybridizes to the complement of the nucleotide sequence of any of (a) - (c)

under hybridization conditions allowing no more than a 21% mismatch between the nucleotide sequences, wherein the encoded polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation.

Claim 5: An isolated polypeptide encoded by a nucleic acid molecule comprising:

- (a) a nucleotide sequence encoding a polypeptide that is at least about 70 percent identical to the polypeptide set forth in SEQ ID NO: 5, wherein the encoded polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation;
- (b) a region of the nucleotide sequence of SEQ ID NO: 4, the DNA insert in ATCC Deposit No. PTA-976, or the nucleotide sequence of (a), wherein the encoded polypeptide comprises at least about 25 amino acid residues, and wherein the encoded polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation, or is antigenic; or
- (c) a nucleotide sequence that hybridizes to the complement of the nucleotide sequence of (b) under hybridization conditions allowing no more than a 21% mismatch between the nucleotide sequences, wherein the encoded polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation.

Claim 6: An isolated polypeptide encoded by a nucleic acid molecule comprising a nucleotide sequence:

- (a) encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one conservative amino acid substitution;
 - (b) encoding a polypeptide as set forth in SEQ ID NO: 5 having a C- and/or N-terminal truncation;
 - (c) encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one modification that is a conservative amino acid substitution, C-terminal truncation, or N-terminal truncation; or
 - (d) that hybridizes to the complement of the nucleotide sequence of any of (a) - (c) under hybridization conditions allowing no more than a 21% mismatch between the nucleotide sequences;
- wherein the encoded polypeptide upon exposure to mammalian cells, causes an increase

in cellular protein tyrosine phosphorylation.

Claim 7: The isolated polypeptide according to Claim 2 or 3, wherein the percent identity is determined using a computer program that is GAP, BLASTP, FASTA, BLASTA, BLASTX, BestFit, or the Smith-Waterman algorithm.

Claim 8: A composition comprising the polypeptide of any of Claims 1, 2, or 3, and a pharmaceutically acceptable formulation agent.

Claim 9: The composition of Claim 8, wherein the pharmaceutically acceptable formulation agent is a carrier, adjuvant, solubilizer, stabilizer, or anti-oxidant.

Claim 10: The composition of Claim 8, wherein the polypeptide comprises an amino acid sequence as set forth in SEQ ID NO: 6.

Claim 11: A polypeptide comprising a derivative of the polypeptide of any of Claims 1, 2, or 3.

Claim 12: The polypeptide of Claim 11 that is covalently modified with a water-soluble polymer.

Claim 13: The polypeptide of Claim 12, wherein the water-soluble polymer is polyethylene glycol, monomethoxy-polyethylene glycol, dextran, cellulose, poly-(N-vinyl pyrrolidone) polyethylene glycol, propylene glycol homopolymers, polypropylene oxide/ethylene oxide copolymers, polyoxyethylated polyols, or polyvinyl alcohol.

Claim 14: A fusion polypeptide comprising the polypeptide of any of Claims 1, 2, or 3 fused to a heterologous amino acid sequence.

Claim 15: The fusion polypeptide of Claim 14, wherein the heterologous amino acid sequence is an IgG constant domain or fragment thereof.

Claim 16: A polypeptide produced by a process comprising culturing a host cell comprising a vector comprising a nucleic acid molecule comprising a nucleotide sequence:

- (a) as set forth in SEQ ID NO: 4;
- (b) of the DNA insert in ATCC Deposit No. PTA-976;
- (c) encoding a polypeptide as set forth in SEQ ID NO: 5; or
- (d) that hybridizes to the complement of the nucleotide sequence of any of (a) - (c)

under hybridization conditions allowing no more than a 21% mismatch between the nucleotide sequences, wherein the polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation;

under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.

Claim 17: A polypeptide produced by a process comprising culturing a host cell comprising a vector comprising a nucleic acid molecule comprising:

(a) a nucleotide sequence encoding a polypeptide that is at least about 70 percent identical to the polypeptide set forth in SEQ ID NO: 5, wherein the encoded polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation;

(b) a region of the nucleotide sequence of SEQ ID NO: 4, the DNA insert in ATCC Deposit No. PTA-976, or the nucleotide sequence of (a), wherein the polypeptide comprises at least about 25 amino acid residues, and wherein the polypeptide fragment upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation, or is antigenic;

or

(c) a nucleotide sequence that hybridizes to the complement of the nucleotide sequence of (b) under hybridization conditions allowing no more than a 21% mismatch between the nucleotide sequences, wherein the polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation;

under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.

Claim 18: A polypeptide produced by a process comprising culturing a host cell comprising

a vector comprising a nucleic acid molecule comprising a nucleotide sequence:

- (a) encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one conservative amino acid substitution;
- (b) encoding a polypeptide as set forth in SEQ ID NO: 5 having a C- and/or N-terminal truncation;
- (c) encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one modification that is a conservative amino acid substitution, C-terminal truncation, or N-terminal truncation; or
- (d) that hybridizes to the complement of the nucleotide sequence of any of (a) - (c) under hybridization conditions allowing no more than a 21% mismatch between the nucleotide sequences;

wherein the polypeptide upon exposure to mammalian cells, causes an increase in cellular protein tyrosine phosphorylation;

under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.

Claim 19: The polypeptide of any of Claims 16, 17, or 18, wherein the host cell is a eukaryotic cell.

Claim 20: The polypeptide of any of Claims 16, 17, or 18, wherein the host cell is a prokaryotic cell.